

Flanagan, Sarah

From: Vaughn, Stephanie
Sent: Monday, June 03, 2013 11:19 AM
To: Flanagan, Sarah; Hick, Patricia
Subject: FW: RM 10.9, WQMP....
Attachments: WQMP_Outline.docx

From: Vaughn, Stephanie
Sent: Friday, May 31, 2013 2:50 PM
To: Robert Law
Cc: Jay Nickerson; Anne Hayton
Subject: RM 10.9, WQMP....

Hi Rob,

Attached is a revised outline. Please let me know if you have any questions or if you would like to set up a call early next week to discuss.

Thanks,
Stephanie

PASSAIC RIVER RM 10.9 TCRA

SURFACE WATER QUALITY MONITORING PLAN OUTLINE

Revised May 31, 2013

1. Buoy Locations

- a. The two far field buoys (#1 and #4) should be moved closer to the removal area. The downstream buoy #4 should be placed at the RM 10.2 CWCM monitoring location, and the upstream buoy #1 should be placed an equal distance upstream (which should be just north of the Route 3 Bridge).
- b. The two near field buoys (#2 and #3) should be placed 200 feet up- and downstream of the removal area (as currently proposed).
- c. The mobile buoy (#5) should serve two primary purposes: (1) as an “early alarm” that there are potential impacts to surface water quality, and (2) as an indicator of potentially significant impacts to water quality. The buoy should be positioned accordingly, and also used for tracking visible plumes of turbidity/TSS originating as a result of TCRA dredging operations.
- d. Note 1: Depending on the data collected as the monitoring program is implemented, the locations of the buoys #1-#4, and how Buoy #5 is used, may have to be modified.

2. Pre-Dredging Baseline Monitoring

Purpose: to obtain pre-dredging data to (1) gain experience in implementing the monitoring program; (2) attempt to verify turbidity-TSS-COPC correlations; and (3) identify any needed revisions to the monitoring program.

- a. Start approximately 30-days prior to dredging – allow for a 5-day data evaluation period immediately preceding the start of dredging.
- b. 10-day monitoring period with turbidity and TSS sampled at surface and mid-depth 3 times/day (one sample collected during each ebb, slack, and flood tide periods) at buoy locations #1, #2, #3, and #4:
 - 4 sites x 3 tidal periods x 2 depths x 10 days = 120 turbidity and 120 TSS samples.
- c. During 3 of these 10 days, conduct transect sampling at the buoy locations specified below, targeting a different tidal period (ebb, slack, or flood) each day:
 - 3 sampling locations at each buoy location (mid-channel, 50 feet off each shoreline)
 - Collect samples from 2 depths – surface minus 1 foot and mid-depth
 - Ebb tide: Buoys #1, #2, and #3
 - Flood Tide: Buoys #2, #3, and #4
 - Slack Tide: Buoys #1, #2, #3, and #4
 - Analyze each of these samples for TSS, POC, DOC, and turbidity:
 - 10 day-sites x 3 locations/transect x 2 depths/transect = 60 TSS, POC, DOC, and turbidity samples

- Combine 6 equal volume water samples to create one composite sample at each sampling location to analyze for TSS, POC, DOC, and COPCs (need 2L sample for PCDD/F analysis):
 - 10 day-sites = 10 COPC, TSS, POC, and DOC composite samples
 - d. Note 1: Determine whether it is acceptable to sample at only mid-depth locations in the water column during the dredging and capping monitoring program.
 - e. Note 2: If sampling indicates that there are consistent horizontal (across transect) or vertical (surface, mid-depth) differences in turbidity and TSS at a buoy location, the planned sample compositing scheme for COPC analysis during the dredging and capping monitoring program may have to be revised.
3. Initial Dredging Monitoring (first 48 hours)
- Purpose: intensive sampling to (1) identify any unpredicted impacts to surface water quality; (2) gain experience in implementing the monitoring program; (3) attempt to verify turbidity-TSS-COPC correlations; (4) identify any needed revisions to the monitoring program; and (5) identify any revisions to dredging and capping operations to minimize surface water quality impacts.
- a. Collect samples every 2 hours at surface and mid-depth at buoys #1, #2, #3, and #4 over an 8-hour period each day.
 - b. Analyze each sample for TSS and turbidity:
 - 2 days x 4 sites x 2 depths x 5 samples = 80 TSS and turbidity samples
 - c. Create one composite sample (from individual samples collected every 2 hours) for each buoy location each day to analyze for POC, DOC, TSS and COPCs (need 2L sample for PCDD/F analysis):
 - 2 days x 4 sites = 8 COPC, POC, DOC, and TSS composite samples
 - d. Buoy #5 Plume Tracking – if a plume of suspended sediment is observed, determine the horizontal and vertical extent of the plume by measuring turbidity along suitably-spaced horizontal transects and profiling the water column.
 - e. Implement a similar monitoring effort during the first 48 hours of the capping operation.
 - f. Note 1: As appropriate, refine previous determination of whether it is acceptable to sample only at mid-depth locations in the water column during the rest of the dredging and capping program.
 - g. Note 2: If sampling indicates that there are consistent vertical (surface, mid-depth) differences in turbidity and TSS at a buoy location, the planned sample compositing scheme for COPC analysis during dredging and capping may have to be revised.

4. Routine Dredging Monitoring

Purpose: To continually determine real-time turbidity levels in and outside the RM 10.9 project area during dredging and capping operations. To obtain periodic COPC data for comparison to SWQC.

- a. Turbidity – continuous at mid-depth, to be refined as necessary based on previous determinations.
- b. Weekly synoptic (i.e. as close as practical during the same portion of the tidal cycle) transect sampling at Buoys #1, #2, #3, and #4:
 - 3 sampling locations at each buoy (mid-channel, 50 feet off each shoreline)
 - Collect samples from 2 depths – surface minus 1 foot and mid-depth
 - Analyze each of these samples for TSS, POC, DOC, and Turbidity:
 - 4 sites x 3 locations/transect x 2 depths/transect
= 24 TSS, POC, DOC, and Turbidity samples
 - Combine 6 equal volume water samples to create one composite sample at each sampling location to analyze for TSS, POC, DOC, and COPCs (need 2L sample for PCDD/F analysis):
 - 4 COPC, POC, DOC, and TSS composite samples per week
- c. Note 1: if sampling indicates that there are consistent vertical (surface, mid-depth) differences in turbidity and TSS at a buoy location, the planned sample compositing scheme for COPC analysis may have to be revised.
- d. Buoy #5 Plume Tracking – if a plume of suspended sediment is observed, determine the horizontal and vertical extent of the plume by measuring turbidity along suitably-spaced horizontal transects and profiling the water column.

5. Event-Based COPC Monitoring (exceedance of Turbidity Action Level)

Purpose: to conduct sampling of the COPCs in the suspended sediment dispersed by the dredging operation when the Turbidity Action Level is exceeded.

- a. Given the turbidity distribution pattern among the four fixed buoy locations, conduct transect sampling (see Section 4-b) at the locations specified in Table 1.
- b. On-site EPA oversight personnel must be contacted immediately to help guide this Event-Based COPC monitoring. Adjustments to the sampling specified in Table 1 may be made by EPA based on actual field conditions.

6. Turbidity Trigger and Action Levels

- a. Monitoring Interval: 1 hour, with turbidity measured at 15 minute intervals
- b. Trigger Level – upstream (buoy #1 or #4) background + 20 NTU
 - Response: Evaluate operation and effectiveness of BMPs – fix/revise as needed; prepare to implement COPC sampling. Buoy #5 – track the horizontal and vertical extent of any visible suspended sediment plume.
- c. Action Level – upstream (buoy #1 or #4) background + 30 NTU
 - Response: Stop dredging; Evaluate operation and effectiveness of BMPs – fix/revise as needed; implement COPC sampling at buoy locations (see Table 1). Buoy #5 – track the horizontal and vertical extent of any visible suspended sediment plume.

- d. Note 1: the Turbidity Trigger and Action Levels will be continually reviewed, and, if necessary, revised as appropriate, as data is collected during the monitoring program.

7. COPC Analysis Requirements

- a. Two liters samples should be used for PCDD/PCDF analysis.
- b. The target COPCs are total PCB congeners, mercury, and 2,3,7,8-TCDD plus the 17 World Health Organization chlorinated dioxins and furans (WHO 2005), as well as the other parameters discussed in the plan.
- c. To be useful in an adaptive management monitoring framework, expedited turnaround times (5 days for TSS, 30 days or less for COPCs, POC, and DOC) for all analyses are needed. Laboratory-only validated data must be reported as soon as possible; third-party validation of the data can be completed and reported within the “standard” timeframes.

8. Additional Comments

- a. As the data is reported, it should be incorporated into the TSS-turbidity-COPC correlation analyses.
- b. Adjustments to the monitoring program may be made, if appropriate, in the context of an adaptive management framework.
- c. Extra/replicate monitoring and sampling equipment should be maintained on-site in case of equipment breakdowns, etc.

Table 1: Event-based COPC sampling requirements when the Turbidity Action Level (Background + 20 NTU) is exceeded at one or more monitoring buoys.

Scenario	Buoy #1	Buoy #2	Dredging Area	Buoy #3	Buoy #4	Sample Buoys
	Upstream/ebb				Downstream/ebb	
Note: reverse sampling requirements during flood tidal period.						
#1	Background	< TAL	X	< TAL	< TAL	None
#2	Background	< TAL	X	< TAL	> TAL^	None
#3	Background	< TAL	X	>TAL	< TAL	#2, #3
#4	Background	< TAL	X	>TAL	>TAL	#2, #3, #4
#5	Background	>TAL	X	< TAL	< TAL	None
#6	Background	>TAL	X	< TAL	> TAL^	None
#7	Background	>TAL	X	>TAL	< TAL	#1, #2, #3
#8	Background	>TAL	X	>TAL	>TAL	#1, #2, #3, #4

^Increase at Buoy #4 indicates additional, non-dredging downstream source of turbidity.